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REMARKS

Reconsideration of the present application is respectfully requested. In this amendment, claim 21 has been canceled. No claims have been amended or added.

Claims 1-20, 24 and 25 stand rejected under 35 U.S.C. § 103(a) based on U.S. Patent no. 6,247,077 of Muller et al. ("Muller") in view of U.S. Patent Application Publication no. 2002/0099797 of Merrell et al. ("Merrell"). Claims 21-23 stand rejected under 35 U.S.C. § 103(a) based on Muller in view of Merrell and further in view of U.S. Patent no. 5,920,700 of Gordon et al ("Gordon").

In general, the present invention relates to a self-contained storage management device, connected between multiple host computers and multiple physical storage devices on a storage area network (SAN), which centralizes the management layer in the SAN. Accordingly, the device includes (among other features) tools for discovering the topology and other attributes of the SAN and automatically detecting changes to the topology.

Discussion of RejectionsClaim 1

Applicants respectfully traverse the rejections. Regarding claim 1, the Examiner acknowledges that Mueller fails to disclose "a third code component configured to operate one of said control modules to receive said device information and in response thereto to initialize, characterize, and profile said corresponding storage devices."

(Final Office Action, page 3.) However, the Examiner contends that Merrell discloses such functionality and that it would be obvious to combine the teachings of Merrell with those of Muller.

In characterizing Merrell's disclosure, the Examiner states (Final Office Action, pages 3-4):

In an analogous art, Merrell disclosed an architecture for access to embedded files using a SAN intermediate device in which the intermediate device maps file system parameters to physical parameters of the storage area network (Merrell, paragraph 22) and clients can issue requests directly to the SAN fabric which translates the logical request into the proper physical address, e.g. Target/LUN (Merrell, paragraph 40) and shares with the clients (Merrell, paragraph 41).

Muller describes a switch fabric between clients and storage devices. Merrill provides a more detailed intermediate switch that includes storage management resources (Merrell, fig. 2 and related description).

First, one of the requirements to establish a *prima facie* case of obviousness is that the cited combination of prior art references must teach or suggest *all of the claim limitations*. *In re Vaeck*, 947 F.2d 488, 20 USPQ.2d 1438 (Fed. Cir. 1991); MPEP § 706.02(j) (emphasis added). Merrell's disclosure, *as characterized by the Examiner* in the above-quoted remarks, clearly does not equate to or include (nor is it even similar to) the *specific claim limitations* which the Examiner acknowledges are not disclosed in Muller (i.e., "a third code component configured to operate one of said control modules to receive said device information and in response thereto to initialize, characterize, and profile said corresponding storage devices" (emphasis added)). Consequently, even assuming *arguendo* the Examiner's above-quoted characterization of Merrell is completely accurate, the Examiner has not even alleged that all of the limitations of

claim 1 are disclosed in the cited combination of references. Thus, the Examiner has not alleged sufficient facts to establish a *prima facie* case of obviousness.

Indeed, in contrast with claim 1, Merrell does *not* disclose or suggest a ("third") code component configured to operate one of said control modules *to receive said device information and in response thereto to initialize, characterize, and profile said corresponding storage devices*. The Examiner cites Merrell at paragraphs 22, 40, 41 fig. 2 and related description (Final Office Action, pp. 3-4). However, those sections do not contain any disclosure or suggestion of the above-mentioned functionality, nor is there any such disclosure or suggestion elsewhere in Merrell or in Muller. The basic idea in Merrell is that the logical to physical mapping of storage is put in a central location, such as in an intermediate switch on the network. Accordingly, paragraphs 40 and 41, for example, describe the use of a "BMAP" function in such an intermediary device to find a physical address that corresponds to a logical address within a given file. There is absolutely no hint, however, there or elsewhere in Merrell, of operating a control module *to receive device information and in response thereto to initialize, characterize, and profile corresponding storage devices*. The cited references do not disclose or suggest this limitation, either individually or in combination. For this additional reason, therefore, a *prima facie* case of obviousness has not been established.

Further, notwithstanding the foregoing points, the combination of Muller and Merrell still could not render the present invention obvious, for at least two additional reasons. In the rejection of claim 1, the Examiner states (Final Office Action, pp. 2-3):

It is well-known in the art that **switches contain ports** (both input ports and output ports). It is also well known in the art that switches are

capable of forwarding packets directly to the ports associated with particular network addresses, meaning that **each port must have a control module** that controls the use of the port, in order to control the data transfer, ensuring that the data is transmitted to its proper address.

2. Regarding claim 1, Muller disclosed a storage management device containing a switching fabric that provides communication between external nodes and external storage devices (Muller, col. 4, lines 15-22). In order for the nodes and storage devices to communicate through the switching fabric, the switching fabric must contain input ports and output ports that are controlled by **at least one control module within the switching fabric** in order for data communication to properly be sent through the switching fabric to the storage device, each port being associated with an address of one of the storage devices. Therefore the switch allows for the client to request data from the storage device and a storage device respond with the data. (Emphasis added.)

It is apparent from the language emphasized above (bold) that the Examiner takes the position that the "one or more control modules" and the "one or more storage control modules" of claim 1 are inherently *included within the switching fabric* in Muller. Note that from the plain language of claim 1, the "control module(s)" recited in claim 1 is/are the element(s) that perform the recited operation of receiving device information and in response thereto, initializing, characterizing, and profiling the corresponding storage devices (i.e., "a third code component *configured to operate one of said control modules to receive said device information and in response thereto . . .*") (emphasis added). But because the Examiner contends that the "control module(s)" in Muller is/are inherently within the switching fabric itself, by following the Examiner's own logic, there would have to be some basis in the prior art why it would be desirable to put that recited functionality (i.e., receiving device information and in response thereto, initializing, characterizing, and profiling . . .) *within the switching fabric itself*, in order for the Examiner's reasoning to stand up. (Note that claim 1 does *not* recite that this functionality must be within the switching fabric itself, but this is the logical extension of

the Examiner's logic.) Applicants respectfully submit, however, that there is no basis or suggestion in the prior art, of why it would be desirable for *the switching fabric itself* to have the ability to receive device information and in response thereto, to initialize, characterize, and profile corresponding storage devices. Therefore, the rationale for the rejection of claim 1 based on Muller/Merrell does not withstand scrutiny.

Additionally, claim 1 recites *two different sets* of control modules, i.e., "one or more control modules" and "one or more storage control modules", which according to the claim language *interact with each other* in a particular way: Specifically, claim 1 recites "one of said control modules *to issue a request for device information*" and "one of said storage control modules *to receive said request for device information and in response thereto* to obtain device information corresponding to one or more of said one or more storage devices . . ." (emphasis added). Even if one accepts *arguendo* the Examiner's contention that a switching fabric inherently includes a control module, there is still no disclosure or suggestion in the cited art of the above-noted specific functionality, in a storage management device that is coupled between one or more external computers and one or more external storage devices on a network. And again, to render the claimed invention obvious, by following the Examiner's own logic, the prior art would at least have to suggest two different sets of control modules having this particular functionality *within the switching fabric itself*, which it does not. For this additional reason, therefore, rejection of claim 1 is improper and should be withdrawn.

Claim 11

The only rationale given for the rejection of claim 11 is, "Claim 11 includes a method with limitations that substantially similar [sic] to the limitations of claim 1" (Final Office Action, p. 4). Applicants respectfully submit that this rationale is insufficient to support a rejection. Although some of the limitations in claim 11 may be similar to limitations in claim 1, claim 11 also includes additional limitations, which Applicants *specifically pointed out and argued* in their last response to further distinguish claim 11 from the cited art (see response filed 5/19/2006, pp. 14-15). However, the Examiner has made no attempt to address those arguments or the additional limitations to which they relate. "It is important for an examiner to properly communicate the basis for a rejection so that the issues can be identified early and the applicant can be given a fair opportunity to reply." MPEP § 706.02(j): Applicants respectfully submit that, if the Examiner decides to maintain the rejection, the Examiner is obligated to specifically address Applicants' arguments and the additional limitations to which they relate regarding claim 11 and point out why those arguments are believed to be incorrect.

Those arguments shall now be substantially repeated for the Examiner convenience. Claim 11 recites:

11. A method implemented in a storage management device for exchanging data between a plurality of computers that are external to said storage management device and a plurality of physical storage devices that are external to said storage management device, the storage management device comprising a plurality of first data ports configured for communication with said computers, a plurality of second data ports configured for communication with said physical storage devices, and a switch fabric configured to selectively exchange data among said first data ports and said second data ports, the method comprising:  
communicating a request for device information;

obtaining device information corresponding to said physical storage devices that are external to said storage management device;  
based on said device information, initializing said corresponding physical storage devices;  
identifying a plurality of first communication paths between said storage management device and said physical storage devices;  
storing in one or more data stores said device information and path information indicative of said first communication paths;  
receiving **user-provided information** relating to virtual storage configuration;  
and  
**based on said device information, said user-provided information and said path information, associating one or more of said physical storage devices to said virtual storage configuration.**  
(Emphasis added.)

Applicants arguments regarding claim 1, regarding the combination of Muller and Merrell, also apply to claim 11.

In addition, Applicants find no disclosure or suggestion in Muller or Merrell of (per claim 11) associating one or more physical storage devices to a virtual storage configuration based on device information (corresponding to physical storage devices that are external to the storage management device), *user-provided information* relating to the virtual storage configuration, and path information indicative of communication paths between the storage management device and the physical storage devices.

The previous Office Action cited Muller at col. 45, lines 11-21 as disclosing essentially this functionality (previous Office Action, p. 7). However, Applicants can find no disclosure or suggestion in that section of a storage management device receiving *user-provided information* relating to a virtual storage configuration, much less using it to associate one or more physical storage devices to a virtual storage configuration. Further, Applicant can find no disclosure or suggestion anywhere in Muller of associating one or more physical storage devices to a virtual storage configuration

based on device information (corresponding to physical storage devices that are external to the storage management device), user-provided information relating to virtual storage configuration, *and* path information indicative of communication paths between the storage management device and the physical storage devices. Neither can Applicants find such disclosure in Merrell.

For at least these reasons, therefore, claim 11 and all claims which depend on it are patentable over the cited art.

Claim 17

Applicants arguments regarding claim 1, regarding the combination of Muller and Merrell, also apply to claim 17.

Claim 21

Claim 21 has been canceled.

Claim 22

The only rationale given for the rejection of claim 22 is, "Claim 22 includes a storage management device with limitations that are substantially similar to claim 21, and is therefore rejected under the same rationale" (Final Office Action, p. 10).

Applicants respectfully submit that this rationale is insufficient to support a rejection. Although some of the limitations in claim 22 may be similar to limitations in claim 21, claim 22 also includes additional limitations, which Applicants *specifically pointed out and argued* in their last response to further distinguish claim 22 from the cited art.



However, the Examiner has made no attempt to address those arguments or the additional limitations to which they relate. "It is important for an examiner to properly communicate the basis for a rejection so that the issues can be identified early and the applicant can be given a fair opportunity to reply." MPEP § 706.02(j): Applicants respectfully submit that, if the Examiner decides to maintain the rejection, the Examiner is obligated to specifically address Applicants arguments and the additional limitations to which they relate regarding claim 22.

Those arguments are now substantially repeated, for the Examiner convenience.

Claim 22 recites:

22. A storage management device for use on a storage network, the storage management device comprising:  
one or more control modules, each having one or more first data ports;  
one or more storage control modules, each having one or more second data ports;  
a switch fabric to selectively exchange data among said first data ports and said second data ports, some of said first data ports and said second data ports to communicate data with a plurality of computers that are external to the storage management device, others of said first data ports and said second data ports to communicate data with a plurality of storage devices that are external to the storage management device;  
logic to obtain device information corresponding to one or more of said one or more storage devices, **wherein said device information includes reliability information, availability information, a failover policy, command support capability, and performance information;**  
and  
logic to receive said device information and in response thereto to initialize, characterize, and profile said corresponding storage devices.  
(Emphasis added.)

Applicants arguments regarding claim 1, regarding the combination of Muller and Merrell, also apply to claim 22.

In addition, Applicants do not find in Muller or Merrell any disclosure or suggestion of (per claim 22) a storage management device which includes logic to obtain device information corresponding to one or more storage devices, wherein the device information includes reliability information, availability information, a failover policy, command support capability, *and* performance information. Note that this limitation is also recited in dependent claims 24-26 and is similar to what is recited in dependent claims 9, 12 and 20.

In rejecting dependent claims 9, 12 and 20 in the previous Office Action, the Office cited Muller at: col. 25, Table VIII (allegedly disclosing reliability information and availability information); col., 9, lines 65-67 and col. 10 lines 29-31 (allegedly disclosing failover policy information); col. 24, lines 3-11 (allegedly disclosing command support information);; and col. 17, lines 20-23 (allegedly disclosing performance information); (see, e.g., Office Action at pages 5, 7 and 10).

Applicants do not find any disclosure or suggestion in Muller, however, of a storage management device obtaining *device information including* (among other things) a *failover policy*. Muller mentions that two halves of an ION dipole are attached to a common set of disk devices (col. 9, line 65 to col. 10 line 3). That is an approach to failover; however, it is not any suggestion of a storage management device *obtaining information on* a failover policy, as recited in claims 22 and 24-26. (Note that Applicants' silence regarding the other types of device information recited in claims 22 and 24-26 does not represent or indicate agreement with the Office's interpretation.) neither do Applicants find any such disclosure or suggestion in Merrell.

Claim 23

Regarding dependent claim 23, Applicants do not find any disclosure or suggestion in the cited references, either individually or in combination, of a storage management device *obtaining reliability information indicating whether a storage device is a RAID device or a non-RAID device*. The Examiner cites Merrell as allegedly disclosing this functionality at "col. 2, lines 40-45" (Final Office Action, p. 10). However, there are no column or line numbers in Merrell, so Applicants are unable to identify the cited section. In any event, Applicants find no mention of "RAID" in Merrell, much less the above-noted specific limitations recited in claim 23. Applicants respectfully submit that the rejection of claim 23 was improper for at least these reasons.

Other Dependent Claims

In view of the above remarks regarding the independent claims, a specific discussion of the dependent claims is considered to be unnecessary. Therefore, Applicants' silence regarding any dependent claim is not to be interpreted as agreement with, or acquiescence to, the rejection of such claim or as waiving any argument regarding that claim.

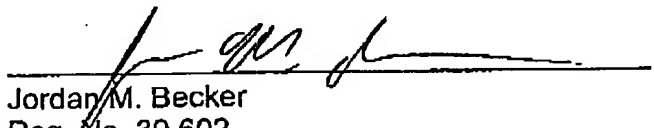
Conclusion

For the foregoing reasons, the present application is believed to be in condition for allowance, and such action is earnestly requested.

If there are any additional charges/credits, please charge/credit our deposit  
account no. 02-2666.

Respectfully submitted,  
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